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(54) THE APPARATUS FOR ELIMINATING FREQUENCY VARYING BIT NOISE OF THE TELEVISION RECIVER.

## Abstract

Machine Translation

Human Translation

1 Content none.

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Human Translation

The circuit automatically tracks the frequency of the beat noise in a television receiver, and eliminates the beat noise by varying the filtering frequency. The circuit comprises a frequency discriminator (11), connected between a video detector (4) and a video processor (5) to detect the beat frequency and provide a frequency variable filter (12) with the voltage relating to the beat frequency, the frequency variable filter (12) for converting the filtering frequency into the beat frequency, and a delay circuit (13) to delay the output of the video detector for the delay time in the frequency discriminator and the frequency variable filter.

▶ Representative Drawing(s)

Fig. 1

## Description

2 [Title of invention]

3 The apparatus for eliminating frequency varying bit noise of the television receiver.

4 [The simple description of the drawing]

5 Fig. 1 is a system circuit block drawing of the television image signal processing system in which the conventional bit circuit for eliminating noise is equipped.

6 Fig. 2 is a system circuit block drawing of the television image signal processing system in which the bit circuit for eliminating noise is equipped.

7 Fig. 3 is a referential view in Fig. 2, more concretely, the frequency distinction part is shown.

8 Fig. 4 is a referential view in Fig. 2, more concretely, the frequency variable filter part is shown.

9 (a) of Fig. 5, and (b) is the NAND gate output signal waveform drawing in the frequency sweep sampling signal and 3MHZ bit generation.

10 \* The description of reference numerals of the main elements in drawings.

11 11: frequency distinction part 12: frequency variable filter part.

12 13: delay circuit part 111: analog to digital converter.

13 112: horizontal blanking selector 113: register.

14 114: sweep sampling signal generator 115: frequency-to-voltage converter.

15 116: frequency counter.

16 [The detailed description of an invention]

17 In the television receiver, the present invention relates to the beat noise eliminative circuit of the video signal. Although the beat noise frequency is changed in such circuit particularly, such circuit automatically detects the changed frequency and this removes.

18 The system circuit block of the image signal treatment system of the general television receiver showed like Fig. 1.

19 Here, the television signal received in the antenna (1) is connected in order to be applied after the tuner (2) in the VIF shift (3), the adjacency channel trap (7) and voice trap (8). The output signal of the VIF shift (3) is applied after the image detector stage (4) and video color deflection (5) in the Braun tube (6). And the output signal of the image

- detector stage (4) is connected after the respective color signal treatment part (9) and sync signal processor (10) in order to be applied in the deflection coil (DY) of the Braun tube (6) and video color deflection (5).
- 20 And in this kind of conventional system, after television signal received in the antenna (1) are selected in the tuner (2), one broadcast signal in which a viewer wants is outputted.
- 21 This output signal was intermediate frequency amplified after the VIF shift (3) and it was applied in the adjacent channel trap (7) at the same time it damped 47.15MHZ signal which was the adjacent channel frequency to about -40dB level and it prevented the radio interference of the adjacent channel signal and it was applied in moreover, the voice trap (8) and it damped 41.25MHZ signal which was the voice signal frequency to about -50dB level and it removed 920KHZ beat noise of the color subcarrier and speech signal.
- 22 The output of the VIF shift (3) is image-detected after the image detector stage (4) and the output of the VIF shift (3) is inputted to the video color deflection (5), the color signal treatment part (9) and sync signal processor (10) and the output is processed with the respective color signal demodulator and synchronizing separation.
- 23 As described above, the demodulated chroma signal was added through the video color deflection (5) with the brightness signal and it was reproduced to the original video signal and it was applied in the Braun tube (6) and the synchronizing signal fitted the motive of the television signal.
- 24 But there is a problem that in this kind of the conventional circuit, it can remove only the beat noise in which the means removing the beat noise has the specific frequency which only predetermines with the adjacency channel trap (7) etc. Therefore the picture quality of the television receiver is decreased since removing this of the beat noise trap when the viewing condition is unable to be excellent like an etc. for example, in case of the amateur radio station being used in a nearby or using the high frequency generation electronic device and the frequency from time to time changes when the specific frequency outer garment beat noise set up was generated.
- 25 An object of the present invention are to provide the bit circuit for eliminating noise which automatically traces the changed frequency in order to improve this conventional problem although the beat frequency changes in the imaging device including the television receiver etc. and it removes the beat noise, and in that way secures the picture quality which is clear than this instrument.
- 26 As described in detail, it is the same as that of the next time with the drawing which is below the present invention attached.
- 27 Fig. 2 shows the system circuit block of the bit circuit for eliminating noise.
- 28 Here, the television signal received in the antenna (1) is connected in order to be applied after the tuner (2) in the VIF shift (3), the adjacent channel trap (7) and voice trap (8). The output signal of the VIF shift (3) is applied after the image detector stage (4) and video color deflection (5) in the Braun tube (6). And it is taken to the delay circuit part (13) which is connected at the output end of the frequency distinction part (11), which is connected between the image detector stage (4) and video color deflection (5) and determines the beat frequency mixed into the output video signal of the image detector stage (4) and the frequency variable filter part (12), which is connected at the output end of this frequency distinction part (11) and in which the output voltage which is in proportion to the frequency of this is input and varying the filtering frequency into the beat frequency and image detector stage (4) as to the television receiver which the output signal of the image detector stage (4) is connected after the respective color signal treatment part (9) and sync signal processor (10) in order to be applied in the deflection coil (DY) of the Braun tube (6) and video color deflection (5) and delays the output signal of the image detector stage (4) as the process time delay of the frequency variable filter part (12) and frequency distinction part (11) and is conformed the timing.
- 29 And the above-described frequency distinction part (11) can implement in terms of the frequency-to-voltage converter (115) outputting the AD (Analog/Digital) converter (111), converting the analog output signal of the image detector

stage (4) into the digital signal like

Fig. 3 and the horizontal blanking selector (112), which is connected at the output of this and selects data of the fixed number between the signal of the horizontal blanking period without the video signal and data of the fixed number and the register (113), for being connected at this horizontal blanking selecting unit (112) and output and provisionally,transitorily memorizing the here outputted digital signal and a plurality of inverters ( $I_1$ -In), for being connected at the output of E register (113) and by turns inverting the output of the register (113) and the NAND gate ( $N_1$ ), in which the output of the register (113) outputs the law signal to the left in the air with 1 0 1 0 1 0□□□ time and the sweep sampling signal generator (114), which is generated the sampling signal (fs) in which the frequency is swept and outputted to the A/D converter (111) and the frequency counter (116), in which the NAND gate ( $N_1$ ) discontinues the count operation in the state counting the frequency of the sampling signal (fs) when an output is the low and the voltage which is in proportion to the frequency.

- 30 And the frequency variable filter part (12) can implement in terms of the configuration which parallely connects the voltage variableness \*\*\* ( $V_0$ ) and coil (L) like Fig. 4.
- 31 In this way, if the comprised present invention illustrates an operation and functional effect with reference to Fig. 5, it is the same as that of the next time.
- 32 After being transformed to the digital signal after the analog to digital converter (111) of the third ceramic art if the video signal in which the TV signal received in the antenna (1) is outputted after the tuner (2), and the VIF shift (3) and image detector stage (4) is inputted to the input terminal (IN) of the frequency distinction part (11), data of the fixed number data of the fixed number is selected between the signal of the horizontal blanking period without the video signal and in the horizontal blanking selector (112) and it authorizes in the register (113).
- 33 In the register (113), data temporarily were saved and the signal which it by turns inverts through output terminal after the inverter ( $I_1$ -In) with the one-port sick is added to the input terminal of the NAND gate ( $n_1$ ).
- 34 That is, in the NAND gate ( $N_1$ ) output terminal, the output of the register (113) outputs the logic low (0) signal to the left in the air with 1 0 1 0 1 0□□□ time. The logic high (1) signal is outputted in the other output state.
- 35 At this time, if the sampling signal (fs) in which the frequency is swept is added to the analog to digital converter (111) from the sweep sampling signal generator (114) and the digital signal conversion is performed in an analog, since it becomes immediately, the beat frequency of the input video signal, the frequency of the sampling signal (fs) of the moment in which the NAND gate ( $N_1$ ) output becomes low logically can sense the frequency of the beat frequency mixed into the video signal.
- 36 That is, in the frequency sweep sampling signal state like (a) of Fig. 5, the NAND gate ( $N_1$ ) output in 3MHZ bit generation shows up like (b) of Fig. 5.
- 37 In the meantime, if the frequency counter (116) maintains the state that always counts the frequency of the sampling signal (fs) and the low (0) output signal is input from the NAND gate ( $N_1$ ), it discontinues the count operation and it outputs the relevant value in the frequency-to-voltage converter (115).
- 38 Next, in the frequency-to-voltage converter (115), if the voltage which is in proportion to the frequency is outputted and it inputs like Fig. 2 to the frequency variable filter part (12), since being applied like Fig. 4 in the voltage \*\*\* ( $V_0$ ) and coil (L) and varying the filtering frequency into the beat frequency, it corresponds to the beat noise in which the frequency is changed and the beat noise is removed.
- 39 Here, the frequency variable filter part (12) parallely is manifoldly connected in case it manifoldly has the bit signal. A plurality of frequency variable filter parts (12) can be controlled with an plurality of frequency information obtained from

the frequency distinction part (11).

- 40 At this time, the delay circuit part (13) plays the role of delaying the input signal as the process time delay of the frequency variable filter part (12) and frequency distinction part (11) and being conformed the timing.
- 41 As to the operation relationship of the other circuit part, in order to avoid the duplicate description since being identical with Fig. 1, it omits.
- 42 As illustrated in the above, the present invention is to provide the screen of an ampholyte although because the neighboring electromagnetic wave environment is bad in the imaging device including the television receiver or the VCR etc., it is caused by and the beat frequency changes, it pursuits automatically to the changed frequency and the filtering frequency is automatically varied and the beat noise is removed.

### Scope of Claims

#### Claim[1] :

- 43 The apparatus for eliminating frequency varying bit noise of the television receiver of the image signal processing circuit of the television in which the VIF shift (3), amplifying the television signal of the special channel received in the tuner (2) with 2 intermediate frequency the image detector stage (4) and video color deflection (5) etc. are equipped is connected at the output of this and detects the video signal, wherein it is taken to the delay circuit part (13) generating the voltage which is connected between the image detector stage (4) and video color deflection (5) and detects the beat frequency mixed into the output video signal of the image detector stage (4) with the sampling signal and comes under the fixed frequency and is connected to the output end of the frequency distinction part (11), which provides to the frequency variable filter part (12) and the frequency variable filter part (12), which is connected at the output of the frequency distinction part (11) and in which the frequency comparison voltage corresponding to the small bit frequency provided from the frequency distinction part (11) is input and varying the filtering frequency into the beat frequency and image detector stage (4) and delays the output signal of the image detector stage (4) as the process time delay of the frequency variable filter part (12) and frequency distinction part (11) and is conformed the timing.

#### Claim[2] :

- 44 The apparatus for eliminating frequency varying bit noise of the television receiver of claim 1, wherein the frequency distinction part (11) generates the voltage which is thus in proportion about the analog to digital converter (111), which is connected at the output end of the image detector stage (4) and converts the outputting image analog signal of the complementary rare book into the digital signal and the horizontal blanking selector (112), which is connected at the output end of this analog to digital converter (111) and selects data of the predetermined number between the signal of the horizontal blanking period without the video signal and data of the predetermined number and the register (113), for being connected at the output end of the horizontal blanking selecting unit (112) and provisionally,transitorily memorizing predetermined number data of the horizontal blanking period and a plurality of inverters ( $I_1$  - $I_n$ ), which by turns inverts the output logic in order to be connected at the output of E register (113) and it detects the beat frequency which is not normality among the multiple output logic of the register (113) and it provides to the NAND gate (N1) and the NAND gate (N1), which is connected at the inverter ( $I_1$  - $I_n$ ) output of this multiple and provides the active output in the beat frequency generation to the frequency counter (116) and the sweep sampling signal generator (114), providing the sampling signal ( $f_s$ ) for being connected to the input side of the frequency counter (116) and analog to digital converter (111) and detecting the beat frequency and the frequency counter (116), which consecutively,sequentially,serially counts the frequency of the sampling signal ( $f_s$ ) provided from the sampling signal generator (114) and setting the beat frequency at the active output provided from the NAND gate (N1) and provided to the frequency-to-voltage converter (115) and the small bit frequency provided from the frequency counter (116) and it is taken to the frequency-to-voltage converter (115) provided for the frequency variable filter part (12).

#### Claim[3] :

- 45 As to claim 1. The apparatus for eliminating frequency varying bit noise of the television receiver wherein the output

end is connected between the output end of the input side of the frequency variable filter part (12) of a plurality of frequency variable filter parts (12), included in consideration of the case in which the beat frequency signal is the some extent thing and this multiple and image detector stage (4) while being respectively connected to the output end of the delay circuit part (13) and a plurality of beat frequencies is respectively generated and it is taken to a plurality of frequency discriminators (11) provided to a plurality of frequency variable filter parts (12).











